2   an image source providing an image, the image having a plurality of pixels, each of

3   the pixels having a finite number of bits;

4   a compressor coupled to the image source, the compressor configured to generate a

5   compressed image based on an integer wavelet transform derived using a technique selected

6   from a lifting scheme and a correction method, wherein wavelet coefficients of the integer

7   wavelet transform have the same finite number of bits as the pixels of the image.

1   20. (Amended) An image decompression system, comprising:

2   a compressed image source providing a compressed image;

3   a decompressor coupled to the compressed image source, the decompressor

4   configured to generate a decompressed image based on an integer wavelet transform derived

5   using a technique selected from a lifting scheme and a correction method, wherein wavelet

6   coefficients of the integer wavelet transform have a same finite number of bits as pixels of

7   the decompressed image.

1   21. (Amended) A computer-readable memory storing a computer program for

2   directing a computer system to perform image compression, wherein the computer program

3   implements the steps for performing [a] integer wavelet transformation of an input image

4   having a finite number of bits per pixel, quantizing the wavelet transformed image, applying

5   entropy coding to the quantized image, and outputting a file that includes the entropy coded

6   image, wherein wavelet coefficients of the wavelet transformed image have the same finite

7   number of bits as the pixels of the input image.

REMARKS

Claims 1-32 are pending in the present application. Claims 16-21 have been examined. Claims 1-5 and 22-32 have been with draw from consideration. The Disclosure has been objected to. Claims 16-20 have been rejected under 35 U.S.C. § 103(a) as being

unpatentable over the combination of Chui et al. (U.S. Patent 5,604,824), Calderbank et al.
Wavelet Transforms That Map Integers to Integers, and Said et al., An Image Multiresolution
Representation For Lossless And Lossy Compression. Claim 21 has been rejected under§
103(a) as being unpatentable over the combination of Chui et al. and Rich et al. (U.S. Patent
5,831,625). In light of the above amendments and below remarks, reconsideration of the
present application is respectfully requested.

In paragraph 4 of the Office Action, the title of the present application as been
objected to as not being descriptive. Applicants have amended the title as suggested in the
Office Action and withdrawal of the objection the title is respectfully requested.

In paragraph 5 of the Office Action the specification is objected to as containing a
prohibited hyperlink. Applicants respectfully disagree. The HTML code listed at the
portions of the specification cited in the Office Action merely describe the manner in which
an image compressed according to the present invention can be included in an http link. The
code is not intended to be executable from the patent application, but is included in the
specification to teach how a link including a compressed image can be created. As the code
is not intended to be executable from the specification, withdrawal of the objection is
respectfully requested.

In paragraph 7 of the Office Action, claims 16-20 have been rejected under § 103(a)
over the combination of Chui, Calderbank, and Said. Applicants respectfully traverse this
rejection. Claim 16 as amended at lines 6-7 requires that "wavelet coefficients of the integer
wavelet transform have the same finite number of bits as the pixels of the image." This
feature of the present invention is known as the "Property of Precision Preservation (PPP)"
and is described in the present specification, for example, at page 24, line 19 through page
26. This feature of the claimed invention, allows one to use same number of bits as original
image to represent the wavelet coefficients. In other word, if the original image uses 8 bits
per pixel, all wavelet coefficients uses 8 bits as well.

Applicant respectfully point out that this feature of the integer wavelets of the present invention was also indicated by Calderbank, in the last paragraph of their paper "Wavelet Transforms that Map Integers to Integers". But as noted in Calderbank in the last paragraph of its paper "After finishing this work, we learned that a construction similar to the one presented in Section 3 was obtained independently by Dewitte-Cornelis and Chao-Fisher [11.5]". The present Applicants are the authors of the reference 5, which has been incorporated into the present application. Therefore, Calderbank itself admits that this claimed feature of the present application predates Calderbank's publication. Furthermore, Calderbank in the same paragraph recites the disadvantages of using the approach recited in claim 16. Therefore, Calderbank teaches away from the present invention as recited in claim 16. In light of all of the above, withdrawal of the rejection of claim 16 and its dependent claims 17-19 is respectfully requested.
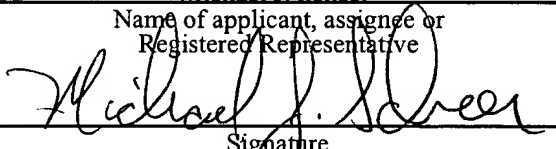
Independent claim 20 recites a decompression system corresponding the compression system of claim 16. Claim 20 has been amended to include a limitation corresponding to the limitation in amended claim 16 in which the "wavelet coefficients of the integer wavelet transform have a same finite number of bits as pixels of the decompressed image." Each of the above arguments made with respect to independent claim 16 apply equally to independent claim 20 and shall not be reiterated. As none of the prior art of record teach or suggest the decompression system as recited in claim 20, withdrawal of the rejection of claim 20 is respectfully requested.

In paragraph 8 of the Office Action, independent claim 21 has been rejected under § 103(a) as being unpatentable over the combination of Chui and Rich. Applicants respectfully traverse this rejection. Claim 21 has been amended to include a limitation similar to the limitation discussed above with respect to claims 16 and 20, namely that "wavelet coefficients of the wavelet transformed image have the same finite number of bits as the pixels of the input image." Each of the above arguments made with respect to independent claims 16 and 21 apply equally to independent claim 21 and shall not be reiterated. As none

of the prior art of record teach or suggest the memory containing a computer program as recited in claim 21, withdrawal of the rejection of claim 20 is respectfully requested.

Applicants have shown that none of the prior art of record teach or suggest the limitations of claims 16, 20 and 21 in which the wavelet coefficients of the integer wavelet transform have the same finite number of bits as the image in an uncompressed state. As each of the claims of the present application are currently in condition for allowance, such action is earnestly solicited.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Asst. Commissioner for Patents, Washington, D.C. 20231, on September 27, 2000:
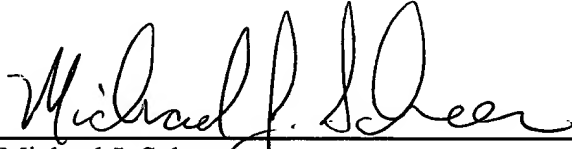
_____Michael J. Scheer_____
Name of applicant, assignee or
Registered Representative

_____
Signature

_____September 27, 2000_____
Date of Signature

Respectfully submitted,

_____

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